**3GPP SA WG2 Meeting #165 *S2-240yyyy***

**Maastricht, NL, 19-23 August 2024 *(was S2-2408053)***

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **23.228** | **CR** | **1423** | **rev** | **1** | **Current version:** | **19.0.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **x** |

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| ***Title:***  | Support of avatar communication in bootstrap data channel  |
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| ***Source to WG:*** | vivo |
| ***Source to TSG:*** | SA2 |
|  |  |
| ***Work item code:*** | NG\_RTC\_Ph2 |  | ***Date:*** | 2024-09-30 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-19 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | Addition of features to support avatar communication based on the conclusions for KI#8 in TR 23.700-77, i.e., avatar ID list is downloaded via BDC. |
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| ***Summary of change:*** | Add avatar ID list downloading description based on the conclusions for KI#8 in TR 23.700-77. |
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| ***Consequences if not approved:*** | The agreed "avatar communication" is not in the TS 23.228. |
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| ***Clauses affected:*** | AC.7.1 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* Start of Changes \* \* \*

## AC.7.1 Bootstrap Data Channel Setup Signalling procedure

Figure AC.7.1-1depicts a signalling flow diagram for establishing a bootstrap data channel in a person-to-person use case. The MF anchors the bootstrap data channel, and the originating network is offering a bootstrap data channel to the remote peer as well for application download.

In the call flow the two UEs have already established an IMS audio session, and the originating UE is updating the IMS audio/video session to an IMS data channel session.

NOTE 1: Some SIP signalling not relevant for the procedure, is not shown in the call flow below.



Figure AC.7.1-1: Bootstrap Data Channel set up Signalling Procedure

The steps in the call flow are as follows:

1. UE#1 sends the SIP INVITE request with an initial SDP to the IMS AS, through P-CSCF and S-CSCF in the originating network. The initial SDP contains offers for the bootstrap data channel establishment request with bootstrap DC stream ID. In this example procedure, the SDP contains both bootstrap data channel offers for originating side and terminating side.

NOTE 2: This SIP INVITE can also be a SIP re-INVITE performed after the initial IMS audio session is setup. The SIP re-INVITE can be initiated either from UE#1 or UE#2.

2. IMS AS validates user subscription data to determine whether the data channel call request should be notified to DCSF.

 If the IMS AS determined, based on the user profile, that data channel call request needs to be notified to DCSF, the IMS AS selects a DCSF for this user based on local configuration or discovery and selection of a DCSF instance via NRF.

 If the IMS AS determined, based on the user profile, that the data channel call request need not to be notified to DCSF, or DCSF decides that DC request is not allowed, the IMS AS proceeds with normal IMS procedures to setup the MMTel session without performing Data Channel bootstrapping, by deleting DC related media information and sending the updated SIP INVITE to the originating S-CSCF.

3. IMS AS notifies the DCSF of the DC call event by sending Nimsas\_SessionEventControl\_Notify (SessionEstablishmentRequestEvent, Session ID, Calling ID, Called ID, Session Case, Event initiator, Media InfoList, DC Stream ID) request to the DCSF.

4. After receiving the DC control request, the DCSF determines the policy about how to process the bootstrap data channel establishment request based on the related parameters in the Data Channel control request (e.g. CallingID, CalledID, DC Stream ID) and/or DCSF service specific policy.

5. Since the SessionEstablishmentRequestEvent indicates that served user is offered local bootstrap media, DCSF, based on its policies reserves originating side MDC1 media information, as well as the terminating side MDC1 remote bootstrap media (targeting remote UE), which are used to receive UE request for application downloading from MF or MRF.

6. DCSF invokes the Nimsas\_MediaControl\_MediaInstruction (Session ID, Media Instruction Set) operation based on its policies instructing the IMS AS how to set up bootstrap data channel with MF both for originating and terminating side. The MediaInstructionSet provided by the DSCF, includes its MDC1 media endpoint addresses created in step 5, DC Stream ID, and the replacement HTTP URL representing the application list offered via the MDC1 interface.

 In this scenario, the DCSF instructs the IMS AS to terminate bootstrap data channel establishment request on originating MF, and initiate remote bootstrap data channel establishment request(targeting remote UE) as well as forwarding remote bootstrap data channel establishment request of served user (targeting remote DCSF) towards terminating network.

7. The IMS AS selects a MF based on local configuration or discovers and selects a MF instance or MRF supporting DC media function via NRF.

8. IMS AS invokes Nmf\_MRM\_Create(List of Media Termination Descriptors) service operation to instruct MF to allocate required data channel media resources. IMS AS request creation of two different Media Terminations, one representing the local bootstrap media to be terminated and the other representing the remote bootstrap media to be offered to remote UE. Each Media Termination includes information required to allocate resources in both Mb and the MDC1 interfaces. The MF responds with the negotiated data channel media resource information to IMS AS. If MRF is used, IMS AS uses Mr'/Cr to the MRF to reserve data channel media resources.

NOTE 3: The MF media resource allocation in step 8 could be done with one or multiple service invocations.

9. IMS AS responds to the MediaInstruction request received in step 6. The response may include the atomic success result of operation and also includes negotiated data channel media resource information for MDC1.

10. The DCSF stores the media resource information and responds to the Notify Request received in step 3.

11-13. IMS AS sends the INVITE which includes the updated SDP offer adding media information of MF or MRF via the originating S-CSCF to remote network side and UE#2. In this scenario, the SDP offer for bootstrap data channel to UE#2 is included.

14. UE#2 and terminating network returns an 18X response with the SDP answer to bootstrap data channel to originating network. According to the received SDP answer, IMS AS may instruct MF or MRF to update data channel media resource information for UE#2.

15-16: UE#2 and terminating network returns a 200 OK response.

17. The IMS AS notifies the successful session establishment event, Nimsas\_SessionEventControl Notify (SessionEstablishmentSuccessEvent, Session ID, Media Info List) to DCSF.

18. The DCSF responds to the Nimsas notification request.

19. 200 OK forwarded to UE#1 which indicates the bootstrap data channel has been established.

20. The originating network P-CSCF executes QoS procedure for bootstrap data channel as specified in TS 23.203 [54] and TS 23.503 [95].

21-24: The bootstrap data channels have been established between originating MF or MRF and UE#1/UE#2. The UEs send application request messages to MF or MRF to request a data channel application or an application list if multiple DC applications are available, via the established bootstrap data channel with its data channel capabilities. If the UE want to set up an avatar communication, the avatar ID list which UE can be used is also requested via the bootstrap data channel. The MF or MRF replaces the root URL with the replacement URL received in steps 8 and forwards the message to received media point of DCSF. The DCSF provides the application list, avatar ID list and proper data channel applications further to UE#1 and UE#2 based on their data channel capabilities and their choices through MF or MRF.

NOTE X: When providing avatar ID list, there has several possibilities, if one or more avatar ID can be used by several data channel applications, the application list and avatar ID list can be provided by the DCSF separately. If one avatar ID can only be used by specific data channel applications, the DCSF will provide the related one or more available avatar IDs for each single data channel applications.

 The bootstrap data channels have also been established between terminating MF or MRF and UE#1/UE#2. The data channel application is requested and downloaded to UE#1 and UE#2 from terminating DCSF

 Steps 20-24 may be executed after step 14, if the SDP answer in 200 OK to the PRACK and UPDATE messages contain the information required to establish bootstrap data channels.

NOTE 4: IMS-AGW needs to allow the establishment of bootstrap data channels based on the information in the 200 OK to PRACK and UPDATE messages.

25. Subsequent procedures continue.

NOTE 5: In the DC application list, the DCSF may provide DC applications supported by both UEs, or only supported by the UE who sends the application request message. The details of how to provide the application list to the UE and how to use it by the UE are not defined in this specification.

\* \* \* End of Changes \* \* \*